A STUDY OF STRESSFUL LIFE-EVENTS IN NORMAL AND PATHOLOGICAL DEPRESSION

DISSERTATION

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF

Master of Philosophy

IN

PSYCHOLOGY

BY

MOHD. SULTAN LONE

Under the supervision of

MRS. HAMIDA AHMAD
READER

DEPARTMENT OF PSYCHOLOGY
ALIGARH MUSLIM UNIVERSITY
ALIGARH (INDIA)

1988

TO WHOM IT MAY CONCERN

This is to certify that Mohd Sultan Lone, Research scholar Department of Psychology, A.M.U., has worked under my supervision for the last two years on ' A study of Stressful life Events in Normal and Pathological Depression'.

His research output was very satisfactory.

(HAMIDA AHMAD)
Reader, Deptt. of Psychology,
A.M.U., Aligarh.

Research Supervisor
Department of Psychology
A.M.U., ALIGARH

Dated: 7.7.88

Acknowledgement

An acknowledgement of what one has received from one's benefactors and friends is almost an impossible task. However, a few words attempting to express one's debt of gratitude would not be entirely unwarranted.

Words fail me in expressing my deep sense of gratitude to my teacher and supervisor of this dissertation, Mrs. Hamida Ahmad, Reader Department of Psychology, AMU Aligarh. Her unfailing guidance coupled with her deep understanding of the subject have crucially contributed to the formulation of this dissertation. I am beholden to her from the deepest of my heart.

Professor Sultan Akhtar, Chairman, Department of Psychology and other teachers of the Department have been highly encouraging during my M. Phil Programme. My fellow researchers in the Department have also cooperated with me during the preparation of this dissertation. I am grateful to them all.

My parents have been financing me during my years at Aligarh. But for their blessings and cooperation I simply could not have attempted to write out this project. It is my pleasant duty to acknowledge my gratitude to them.

My friends at Aligarh have helped and obliged me in various ways. They deserve my thanks unreservedly.

I am obliged to Mr. Suhail Ahmad for his quick and clear typing.

Mohd Sultan Lone

(MOHD. SULTAN LONE)
168, Bhopal House,
Sulaiman Hall,
Aligarh

June, 1988

Contents

c

INTRODUCTION

Depression - definition and concept

We will not be wrong in saying that the 20th century is an age of stress and strain, because collectively as well as individually we are experiencing rapid changes. As was pointed out by some one, if we merely walk we may find ourselves far behind all in this fast race of contemporary life; to keep pace, we have to run. Coping with rapid changes, new demands and competitive life-style, places a heavy burden on the individual's adjustment mechanisms. Unbelievable energy is consumed in coping with stresses. Drained out and fatigued, the individual experiences the state commonly termed as depression. No wonder, the term 'depression' has become a common everyday word today.

Depression is an emotional condition of lowered and unpleasant psychophysical activity either normal or pathological. The normal manifestation preferably termed dejection, refers to a discouraged or dispirited mood; pathological usage refers to a mood of pronounced hopelessness and overwhelming feeling of inadequacy or unworthiness. The central features of depression include, sadness, pessimism, ideas of guilt, suicidal wishes; loss of energy, interest, motivation, concentration and disturbed sleep.

The depression syndrome has been known since antiquity as part of the manic depressive condition. Many references have been found in the writings of Hippocrates to melancholic states and various forms of melancholia were distinguished. Later, Aretaeus suggested the relationship between manias and melancholias and important work was carried out in the field of manic-depressive reaction by the French psychiatrists Falret, Kalhbaum, Kraepline and others.

However, the concept of depression as a syndrome by itself is a matter of contemporary concern and we find scattered over various cultures an interest in this emotional condition of lowered and unpleasant psychophysical activity fraught with pessimism, sadness and hopelessness. It emerges from cross-cultural studies on depression that within its broad definition, there are cultural-specific syndromes, lending a distinctiveness and uniqueness to the manifestation of depression in various cultures.

Cross-cultural Concept

Johnson and Johnson (1965) reported a reaction among Sioux Indians in North America called 'tawatle ye sni' or "totally discouraged". This totally discouraged syndrome involves feelings of helplessness, thoughts of death and

preoccupation with ideas of ghost and spirits. "Hiwa:itck" or the "heartbreak" syndrome among elderly Mohave (American Indians) men has been reported by an anthropologist, Devereux, in 1961. He reported that it is manifested by loss of appetite, sleep difficulties, mourning behaviour and threats of killing others. 'Susto' has been reported (Gobeil, 1973; Kiew, 1968; Rubel, 1964) among central and south American populations of Latin ancestry. It refers to "soul loss" and is characterized by weakness, loss of appetite, sleep difficulties, fear, motor retardation, reduced sexual desire, and a number of anxiety indicators (sweating, diarrhea, rapid heart beat). In many respects it is similar to what is called "agitated depression" in western psychiatric parlance. Marsella, Kinzie & Gordon (1973) have shown that Japanese-American's evidence a strong interpersonal componant in the expression of depression (e.g.; dislike being around others, does not want to talk to others, does not care for appearance). Chinese-American's show a strong somatic component (e.g. somatic pains, sleep difficulty, weakness), and caucasian-American's manifest the more traditional existential patterns (e.g.; despair, loss of purpose, hollow and empty feeling). Rao (1973) examined thirty south Indian patients. According to Rao, all thirty of the cases had sleep difficulties (e.g. insomnia, early waking, sleeplessness), and sucidal tendencies. In the light of

comparative studies, Teja and Narang (1970) and Teja, Narang, and Agarwal (1971) have suggested that somatic complaints are manifested by Indians to a much larger degree than westerners. Guilt among Indians was considered to be of a more "impersonal" nature than guilt among western patients, since the latter are likely to assume more personal responsibility for failure. Bagadia found that 78 per cent Indian patients in Western India reported somatic symptoms while guilt feelings were reported by only 53 per cent of patients. Through word association studies Tanka-Matsumi & Marsella (1976) found that college students in Japan tend to associate with depression words that refer to the physical environment and somatic states, such as rain and dark, or disease and weariness, while Japanese American College students tend to associate with words that are related to internal mood states, such as sadness or loneliness.

It is an accepted fact that child rearing practices, religious training, cultural patterns of mourning, the presence of socially acceptable outlets for aggression and other drives, the extent to which a culture inculcates guilt or diffuses personal responsibility and specific genetic traits in any group of people, will influence the development and form of psychopathology. So, it is suggested that difference in the symptom dimensions

manifested by the different ethnocultural groups were a function of difference in the "self-structure" conditioned by the various cultural traditions.

Theories

Of concern to the psychologists, for purposes of extending help to the depressed is a clear picture of the etiology and dynamics of depression. In understanding the etiological factors of depression theorists have emphasised the importance of social, environmental, psychological and biochemical variables.

In 1911 Abraham made the first systematic attempt to explain manic-depressive illness in terms of psychoanalytic theory by comparing depressions with normal grief or mourning. He suggested that crucial difference between grief and depression is that a mourner is consciously concerned with the lost person, and the depressed patients unconscious feelings of hostility toward the lost person are directed toward himself. In 1917 Freud expanded Abraham's ideas in his paper "Mourning and melancholia". According to him the essential difference between grief and depression was that in the latter there was a marked loss of self-esteem. In mourning loss is conscious whereas in melancholia the true loss is unconsicous. Freud theorized that potential for depression is created

early in childhood when, during oral period, the child's needs may be insufficiently or over-sufficiently gratified. With this arrest in psychosexual maturation, and consequent fixation at the oral stage, he or she may develop a tendency to be excessively dependent on the people for the maintenance of self-esteem. Thus, according to psychoanalysts, depression is a reaction to the loss of infantile object (cathex). In it the individual introjects the lost one, perhaps in a fruitless attempt to undo the loss, and losses his or her ownself. Because as Freud asserted, we unconsciously harbour negative feelings against those we love, the mourner now becomes the object of his or her own hate and anger. According to Arieti (1959), unworthiness and depression are experienced due to an effort to exercise rigid control over feelings of violent aggression towards parents, arising basically due to fear of failure to live up to parental expectations. Klein (1948) shares the same view and suggests that the basis for depression is formed during the first year of life. Another theorist who agreed with the earlier psychoanalytic workers on the importance of initial childhood experiences in predisposing adults towards the development of depression, is Edward Bibring (1953). He emphasized a loss of self-esteem as the crucial element in depression. But he placed more emphasis on ego psychology.

According to the 'behaviourists' the feeling of depression and other symptoms of the clinical syndrome, such as fatigue, reduced activity, are elicited when behaviour receives little reinforcement. The concept of reduction in reinforcement is central to learning theorists (Eastman, 1976).

In 1974 on the basis of experiments conducted, Seligman proposed a learned helplessness model of depression. He suggests that although anxiety is the initial response to a stressful situation, anxiety is replaced by depression if the person comes to believe that control is unattainable. In some ways this model is similar to ego analytical view of Bibring, who proposed that depression follows ".... the ego's shocking awareness of its helplessness in regard to its aspirations".

Seligman's cognitive formulations emphasize the way in which the individual learns to construe the relationship between activity and outcomes, which is that he or she is helpless and the individual feels that the efforts he uses will be in vain. This helplessness later tends seriously and deleteriously to affect their performance in stressful situations that can however be controlled.

In some theories of depression as in some concerning anxiety, thoughts, and beliefs are regarded as causing the emotional state. The most important contemporary theory of depression to regard thought processes as causative factors is Beck's cognitive theory. His central thesis is that depressed individuals feel as they do because they commit characteristic logical errors. Beck calls these errors in thinking "Schemata" or characteristic sets which color how the person actually perceives the world. The depressed person is seen as operating within a schema of self-depreciation and self-blame. This set disposes the individual to interpret or label events in a way that justifies his state of mind.

Biogenic amine theorists emphasize the abnormal functioning of the endocrine glands, in other words biochemical deficiency exposes the individual to depression. The amines have been implicated as having a possible role in the genesis of depression for several reasons.

1. Drugs used in the treatment of depression increase the level of available amines in the brain.
2. Drugs known to increase the level of brain amines produce overactivity and alertness in experimental animals.
3. Drugs (such as reserpine) known to deplete the brain amines produce sedation and inactivity in experimental animals.

4. Drugs that deplete brain amines cause depression in man.

The amines play an important role in the formation of impulses as well as in impulse transmission along the nerve fibre. In general, increased neuronal activity will increase the rate of amine turnover (perhaps particularly norepinephrine metabolism). If this increased rate of production continues for any length of time, the possibility exists that, at least in some individuals there is a rate-limiting step in its synthesis.

Schildkraut (1965) has proposed the catacholamine hypothesis of affective disorders, in which he states that "some, if not all, depressions are associated with an absolute or relative deficiency of catecholamines, particularly norepinephrine, at functionally important receptor sites in the brain. Elation conversely may be associated with an excess of such amines".

Stress - definition and concept

If we observe closely, we find that all theories emphasize the importance of stress, in one way or the other, in the development of depression. Psychoanalysts in terms of the loss of cathetic object, learning theorists in terms of loss of or reduction of positive reinforcement.

Seligman emphasise the feeling of facing the uncontrollable situation in his theory of learned helplessness. Beck's central thesis has been that the individual operates within a scheme of self-depreciation and self-blame in the face of threat which is thought to have the greatest strain.

The concise Oxford Dictionary defines stress in the following three ways: constraining or impelling force, and one example used is 'under the stress of poverty'. The second definition treats it as an effort or demand on energy as in 'subjected to great stress'. The third definition offered talks of a force exerted on a body. The Layman's dictionary consider stress as a constraining force acting on a person who is attempting to cope with this force which exerts or strains his self, leading the individual to perhaps feel fatigued and distressed.

For purposes of illustration we may explain this with the help of a model from engineering. Hook's law of elasticity states that if the strain (the deformation) produced by a given stress (the load or demand) falls within the 'elastic limit' of the material, then when the stress is removed the material will simply return to its original condition. If, however, the strain passes beyond the elastic limit then some permanent damage will result.

This analogy suggests that just as physical systems have an elastic limit, people have some built-in resistance to stress. Upto a point stress can be tolerated but when it becomes intolerable permanent damage, physiological and psychological, may result. Of course, there are limitations to this analogy, because there are individual differences among human beings in their resistance to stress, for one finds that a level easily tolerable to one may be completely intolerable to another.

Approaches

Studies on stress can be placed into one of the three groups representing the main approaches to the problem of its definition. The first approach describes stress in terms of the stimulus characteristics of disturbing or noxious environments and thus usually treats it as an independent variable for study. The second approach treats stress as a dependent variable for study, describing it in terms of the person's response to disturbing or noxious environments, and the third approach views stress as the reflection of a 'lack of fit' between the person and his environment.

Stimulus-based model describe and treat it in terms of the stimulus characteristics of environments which are recognised as disturbing or disruptive. The model used is essentially an engineering one in which

external stress gives rise to a stress reaction, or strain, within the individual. Such an approach usually treats stress as an independent variable for study. Sir Charles Symonds (1947) expressed: "it should be understood once and for all that stress is that which happens to the man, not that which happens in him; it is a set of causes, not a set of symptoms."

Approaches to the study of stress which embrace a response-based definition tend to be concerned with the specification of the particular response or pattern of responses which may be taken as evidence that the person is, or has been under pressure from a 'disturbing' environment. In these types of studies stress is usually treated as the dependent variable, as the response to a stressor agent. Hans Selye (1956) wrote, 'stress is the non-specific (physiological) response of the body to any demand made upon it. Stress he saw quite equivocably as the person's (or animals) response to the demand of his environment. According to him it is essentially the rate of wear and tear on the body. Selye gave the concept of General Adaptation Syndrome, in which he pointed out three phases. In the alarm reaction, the body shows the changes characteristic of initial exposure to the stressor, and at the same level of resistance is reduced (if the

stressor is sufficiently severe, resistance may collapse and death results). The second stage, that of resistance, ensues if continued exposure to the stressor is compatible with adaptation. The body characteristics of the alarm reaction disappear and are replaced by the changes marking the person's (or animals) adaptation to the situation. Resistance rises above normal level. The final stage in all senses of the word, is that of exhaustion. Following long term exposure to the same stress or and one to which the body has adapted, the necessary energy for adaptation may be exhausted and the final collapse occurs. This general syndrome of sickness Selye believed, was superimposed upon all individual diseases, and was manifestation of the non-specific general adaptation syndrome. In concentrating his attention on the body's physiological response to stressor agents, he ignored the role of psychological processes. Mason (1971) has made a significant observation with regard to some noxious physical conditions which do not produce the general adaptation syndrome. He has noted exercise, fasting and heat.

Levi and Kagam (1975) constructed a theoritical model to describe psychological factors in the mediation of physical disease. Their main hypothesis is that psychosocial stimuli can and do cause such disorders.

They focus on the concept of non-specific aetiology as suggested by Selye, and outline several steps in the development of psychogenic physical disorder. They suggest that most life changes evoke a physiological stress response which prepares the person for the physical activity of coping. This response, at least if prolonged, intense or often repeated, is accompanied by an increase of wear and tear in the person and produces structural as well as functional damage. This leads in the long term to increased morbidity and mortality. According to them, psychosocial stimuli and the psychobiological programme, together determine the occurance of the stress response, which in its turn may provoke precursors of disease, and then the disease itself.

The third approach, the interactional one, expresses the view that stress arises through the existence of a particular relationship between the person and his environment. Cox and Macky's man-environmental interaction model of stress suggest that stress can be most adequately described as part of a complex and dynamic system of transaction between the person and his environment. There are five recognisable stages in the system. The first stage is represented by the sources of demand relating to the person and is part of his environment. The person's

perception of the demand and of his own ability to cope form the second stage. Psychphysiological changes can be regarded as the third of this model and represent the response to stress. The fourth stage is concerned with the consequences of the coping responses. The fifth and last stage is one of feedback, which occurs at all stages in the stress system.

According to this system stress may be said to arise when there is an imbalance between the perceived demand and person's perception of his capabilities to meet that demand. What is important for man is his cognitive appraisal of the potentially stressful situation and of his ability to cope. If a situation demands too much of a man, but he has not realised his limitations, he will work on without being stressed until it becomes obvious to him that he can not cope. He then experiences stress. Bourne (1969) suggested that in the investigation of man's response to stress, attention must be paid to the threat itself, the psychological style of the individual in coping with his environment, and the social context in which he exists. Emotional breakdown was conceptualized as resulting from an imbalance between environmental stressors and resources. As long as the balance is maintained, however, that person will be able to come to terms with the situation at hand. If the balance is

disturbed, either through an increase in stressor intensity or a decrease of available resources, then the sign of overt and covert psychiatric illness will begin to emerge. The balance between the two is determined by the personality structure of the individual and reflected in his stress or stimuli threshold.

Ego defenses play a very important role in adjusting to the stressful situations. For example, in a study of parents who had lost their offspring defenses of denial appeared highly successful in reducing the stress (Wolff et al, 1964). According to Lazarus (1976) stress is not simply out there in the environment, that it depends not only on external conditions but also on the constitutional vulnerability of the person and the adequacy of his cognitive defense mechanisms. Ego defenses are gradually "weakened by constant pounding under the stress" to the point where "the ego losses its power to maintain its functional efficiency" (Grinker and Spiegel, 1945). Ego boundries become weak and even the past repressed material is unrepressed. It becomes available to the consciousness and the individual's mood changes permanently. Mood change is the mostly noted clinical feature of the depression.

REVIEW OF LITERATURE

Although much of the relevant literature has been mentioned in the preceding paragraphs, yet a few relevant studies concerning harmonal and other biological changes during stress and depression are being discussed below.

Depression appears to be the common clinical result of severe (chronic) exposure to stress. In depression, the patients may express feelings of hopelessness, and display what is called psychomotor retardation. This is a form of relative inactivity, obvious in an extremely slow and apathetic response to any kind of stress stimulation.

It has been shown that biochemical changes occurs in subjects exposed to a variety of stresses. According to Selye (1950), immediately upon exposure to stress (during period of shock) there is an increase in the blood glucose level, the magnitude and persistence of which is determined by the liver glycogen reserves. If the stress is sufficiently severe or liver glycogen reserves are low there may follow a period of hypoglycaemia. If the stress is then prolonged, blood glycose levels return to normal, and remain so while the person appears to be coping effectively. This apparently normal situation, it is argued, may be a result of an increased production and

utilization of glucose, and this may reflect changes in glucocorticoid activity. Final exhaustion and collapse are accompanied by a drastic fall in blood glucose levels. The main actions of the glucocorticoids in normal concentrations are the facilitation of water excretion by the kidney, the maintenance of normal blood pressure, and an involvement in the manifacture of red blood cells. In higher concentrations, as the result of stress or clinical intervention, they block the inflammatory response, interfere with the manufacture of proteins, cause the loss of calcium and phosphate from the kidneys and the raised blood sugar levels. The later action may be necessary to fuel the activity of coping during the stage of resistance, while the other action may be account for part of the cost of this coping. Mason's research (1963, 1975) has shown that on the occurance of stress, blood glucose levels rise as part of an integrated pattern of catabolic response and on the removal of the stress fall back towards and perhaps below normal, as part of a pattern of enabolic response.

A considerable body of information has been available also regarding the sensitivity of the pituitary adrenalcortial system to wide variety of psychological, stimuli. Frankenhaeuser and Rissler (1970) illustrated the influence of "situational control". This experiment was designed to

vary systematically, the amount of control the subject was able to exert over his situation. This was accomplished by threatening him with punishment by electric shock, and by manipulating his ability to avoid that shock. In session 1, the subject was exposed to unpredictable and uncontrollable shocks. Under these conditions adrenaline excretion was about three times as high as when the subject was relaxed and not threatened (Session IV). In session II and III, the subject perfomed a choice reaction task through which he could avoid some of the shocks. The degree of control possible was greater in session III, than in session II. Increasing control in this way reduced adrenaline excretion of session I. Noradrenaline excretion appeared elevated by participation in the shock sessions, but unaffected by variation in situational control.

Increased adrenocortical activity reflected in increased plasma and urine levels of 17-hydroxycorticosteriods have been noted in response to a variety of stress: hospitalization (Mason, Sachar, Fishman, Humburg and Handlon, 1965), anticipation of laboratory procedures (Mason, 1959), anticipation of theoracic surgery (Price, Thaler, and Mason, 1957), medical exams (Bliss, Migeon, Branch and Samuels, 1956), psychiatric interviews (Hetzel, Schottstaedt, Grace and Wolff, 1955), psychological tests (Freeman, Pincus, and Glover, 1944).

Significant individual differences have been demonstrated by Fox, Murawski, Bartholomay and Gifford (1961), and Wolf, Friedman, Hofer and Mason (1964), in the psychological and physiological handling of similar events in the environment. Specifically, they demonstrated that there was a relationship between the adrenal secretion of 17-hydroxycorticosteriod (17-OHCS) and an individual's characteristic style of dealing with the day to day stresses of living. The concept of ego defenses and the manner in which they were utilized to handle the perception of threatening stimuli was used to explain the differences they observed. Laboratory based stress research (e.g. Lazarus & Launier, 1978) have consistently supported the proposition that both stimulus variables and characteristics of individuals in combination determine reactions to stressful situations. Even stress induced growth hormone release has been found related not to any measurable or obvious degree of subjective distress at the time of catheterization, but rather to an enduring perceptual characteristics, field independence.

In addition to individual differences, social factors may exert a significant effect in altering an individual's perception of stress, and hence his level of adrenal-cortical secretion (Mason and Brady, 1964).

In small groups with free communication among members of equal standing, there is a tendency for a consensus to develop as to how a stress should be perceived which in turn minimizes individual differences in adrenal-cortical response. The group support also serves to reinforce avoidance of prolonged feelings of arousal or uncertainity. As a result members of a group when presented with a threatening event, will tend to have more similar levels of steriod excretion than if they were presented with the same event as isolated subjects.

A number of biological changes demonstrated by above mentioned studies, taking place in individual's exposed to a variety of stress, have been also noted in patient's with affective disorders. Although no specific aetiological relationship between disorder and psychiatric syndromes have been found, yet it has been repeatedly demonstrated that there is a significant increase in the output of adrenal 17-hydroxycorticosteriods during acute severe depressions. Board, Persky and Hamburg (1956) studied blood levels of 17-OHCS of 30 acutely ill psychiatric patients. All were found to have a significant elevation above the mean of a normal group. "Psychotic depressive" group had a higher mean than the patient group in general. Another investigation of a group of

33 depressed patients (Board et al., 1957) showed again that, within a few days of admission, the mean 17-OHCS levels of patients was 60 per cent higher than that for normal controls. The patients with retarded depression tended to show higher mean levels than the patients who were agitated and tearful. In both studies, clinical improvement was correlated with a fall in plasma corticosteroid levels. In a longitudinal study Bunney, Hartmann and Mason (1965) reported a female patient with a 48-hour cycle of alternating mania and depression. They found that, even months after admission to the hospital, she showed abrupt rises in the urinary 17-hydroxycorticosteriod output coincident with shifts of her behaviour from mania to depression. Other studies confirm the finding of high urinary excretion of 17-hydroxycorticosteriod metabolitics in depressed patients. Pryce (1964) found a 23 per cent fall in urinary excretion of depressed female patients by redovery. Ferguson, Bartram and Fowlie (1964) found that the principal urinary metabolite of cortisol was significantly elevated before treatment of depressed patients and fell by 45 per cent after improvement following electroconvulsive therapy.

Not only do most authors report on elevated urinary 17-hydrocorticosteriod output in acutely depressed patients but many of them report a positive correlation

between blood steriod levels and severity of depression. Board et. al.(1956) found that patients rated as highly emotionally distressed had a higher blood cortisol level than the ones who are not. Gibbons and McHugh (1960) found that, in general, the more severe the depression the higher the blood cortisol level. Board et.al.(1957) also found that the greater the 'felt' anxiety and emotional distress the higher was the hormone level. Bliss, Migeon, Branch and Samuels (1956) studied 19 recently admitted disturbed psychiatric patients without any specific diagnosis, concluded that any psychiatric disorder marked by severe emotional turmoil was likely toproduce elevated 17-hydroxycorticoid levels. Michael and Gibbons (1963), in their review suggest that the intensity of the patients emotional response is what is correlated with the rise in edrenocortical activity rather than the quality of the stimulus.

Another line of evidence that the adrenocorticoid elevation in depression is related to subjective discomfort rather than to the presence of clinical disorder is that in manic patients (who share the basic disorder but not the discomfort), the most frequent cortico-steroid finding is depression below normal levels, despite the great activity and energy expenditure of these patients. Rizzo Fox, Laidlow and Thorn (1954) followed the urinary 17-OHCS

in a female patient and found extremely low levels during a phase of manic hyperactivity with return to normal with clinical recovery. Bunney and Hartmann (1965) found in their patient with rapidly alternating manic and depressive days that the urinary steroid level was above normal on depressed days and below normal on manic days.

Bunney et al. (1965) in discussing their patient with regularly alternating moods associated the drop in steriods to "changes in defensive organization that occur during the manic stage". They felt that mania represented a denial of illness and a defense against the pain of depression". They assume that, as one of the symptoms of depression is discomfort, one of the symptoms of mania is overoptimistic lack of discomfort in most situations. The resultant discomfort level might be the determining factor in the corticoid output rather than something specific to manic_depressive disorder itself. Sachar (1967) has shown that the elevation in cortisol production in depressed patients is significantly correlated with the subjective experience of stress and distress. He also suggested that the efficient operation of defense mechanisms to deny significant stressful events associated with the depression serves to keep steroid levels within normal limits and to reduce subjective distress. Breaching

these defense mechanisms is associated with an elevation in cortisol production. Bunney et al. (1965) found two subgroups of depressed patients both of whom were given a high depression rating by ward nurses. One group had a high urinary steriod output, while the output of the other was close to the normal mean. They believed that the group with the higher steriod level complained more about their symptoms and had fewer defenses against them and were still fighting them, while the low group had equivalent depressive symptoms but tended to deny them and blame them on physical illness. The authors suggested that the urinary steriod differences were reflecting differences in the patient's ability to form defenses against the unpleasant psychological symptoms of depression.

The widespread interest in endocrine aspects of psychiatric disorder of course led to numerous studies of the endocrine status of psychiatric patients. At first the hope was that these studies would lead to casual relationships and such different psychiatrists as Freud (1955) and Kraeplin (1896) expressed the hope that psychiatric disorders might be found to be hormonally caused. However, this optimistic point of view faded with improvement in precision of endocrine measures. The consensus of recent work that utilizes more precise measurements has been that no specific

hormonal disturbance is associated with any psychiatric disorder, and it fails to support the notion that endocrine disorder is a specific, either direct or indirect, cause for any major psychiatric syndrome. Rubin and Mandell (1966) states that the research emphasis has shifted from "the concepts of disease specific alterations" to one looking for endocrine responses, was a concomitant of such psychological variables as guilt, anxiety, absence of denial, insight into severeity of the illness, and depressive affect".

Bunney, Mason, Roatch and Hamberg (1965) suggest that stressful events lead to exacerbation of symptoms and to increases in urinary steriod levels. A controlled comparison with the general population show a clear excess of events extending upto 1 year before depressive onset, most marked in the immediately preceding months (Paykel, Hollyman & Tulie 1984).

Rationale

It is apparent from the preceding paragraphs that depression is a crucial problem of modern society. It is also brought out that perceptions and cognitions in fact the individual's 'World view', plays a significant role in depression. Thus life-events, the extent to which they are perceived as negative and stressful is an

important area of study. Since depression to some degree is inherent in the vary process of living and coping with the demands of life it is pertinent to study the phenomenon of these perceived stresses and negative life-events at points where the depression exists at normal levels and at points where the depression becomes pathological. Of course a complete picture will emerge if we extend the study to include a probe into how and why life-events are predominently perceived as negative by some and the same life-events are not given a negative interpretation by others. At the present moment, the investigator is concerned with the first aspect namely of evaluating stressful life events in normal and pathological depression.

METHODOLOGY

It has been brought out by the preceeding discussion in Chapter 1. That the situational manifold (life-stressors have an impact upon our psycho-physical behaviour. The perception of life-experiences do determine our reactions and responses. If the experiences are perceived as traumatic, painful and distressful they drastically shape our mental hygiene.

During the recent years numerous studies have investigated the relationship between life-stress and susceptibility to physical and psychological problems. Most of these studies have been based on the assumptions that (a) life-changes require adaption on the part of the individual and are stressful, and (b) persons experiencing marked degrees of life-change during the recent past are susceptible to physical and psychiatric problems. Mclean (1978) maintains that psychological factors (stressors) are responsible for the development, maintenance and reversal of depression - an unadaptive response. Clinical and research data suggests that microstressors (small everyday stressors) acting cumulatively and in the relative absence of compensatory positive experiences can be potent sources of depression.

It is argued that the main factors seperating persons who do not become depressed from those who do is their management of strategies for coping with stress. Parris, Hjords (1984) is of the view that there is no positive relation between magnitude of life-events and seriousness of illness. Contance, Arlene, Robert and Terry (1986) suggest that for this initially non-symptomatic college sample depression onset is not strongly predictable by knowledge of life-stress exposure. Data show that females tended to score higher than males on a depressive symptomatology (DS) Scale. Although there were no significant age group differences among females in SD scores, the highest scores were found in the youngest and oldest age groups (Hall, Mathew and Keeler, 1984). In view of the research it is suggested that in general, societal roles place women at a greater risk for depression than men (Rothblum, 1984).

These and other considerations led the investigator to conduct this study on postgraduate, male/female, students. It is believed that co-education minimises the role restriction (passivity, dependency and unassertiveness) for females which are assumed to be brought by environmental factors. So it was felt advisable to investigate also the male/female and rural/urban factor in incidence of depression and stressful life events.

Measurement of stress

For measuring the life stress, the most widely used instrument in most life stress research is the Schedule of Recent Experiences (SRE) Holmes and Rahe, (1967). This is a self-administered questionnaire containing a list of 43 events to which subjects respond by checking those events that they have experienced during the recent past (previous 6 months on 1 year).

Although the development of the SRE represents a valuable initial attempt at the quantification of the impact of life change, its adequacy has been questioned on several accounts. (a) The SRE was based on the assumption that life changes per se are stressful regardless of the desirability of the events experienced. Therefore, both desirable and undesirable events are combined in determining the life stress score which is questioned by several writers (Brown, 1974; Mechanic, 1975; Sarason, De Monchaux & Hunt, 1975). (b) Because individuals vary in how they are affected by events, the values derived from group ratings may not accurately reflect the impact that the events have on particular individual. (c) Problems inherent in applying group-derived values to individual cases become obvious when it is noted that certain classes of events listed in the SRE can be quite ambiguous (e.g. major changes in financial status).

Life Experience Survey

LES was developed in order to overcome the shortcomings of SRE and has the three important characteristics that a measure of life stress should possess. First, it include a list of events experienced with at least some degree of frequency in the population being investigated. Second, it allow the respondents themselves for rating of the desirability or undesirability of the events. Third, it allow for individualized ratings of the personal impact of the events experienced.

LES instrument, developed by Sarason, Johnson and Siegel (1978) is a 57-item self-reported measure that allows respondents to indicate events that they have experienced during the past year. The scale has two portions: section 1, designed for all respondents, contains a list of 47 specific events plus three blank spaces in which subjects can indicate other events that they may have experienced. The events listed in section 1, refer to changes that are common to individuals in a wide variety of situations. The 10-events listed in section 2, are designed primarily for use with students, section 2 deals specifically with changes experienced in the academic environment section 1 is appropriate for use with subjects drawn from general population, whereas both sections are relevant to a student population. In

this research, responses of the items of section 1 and 2 were combined in deriving life change scores (this research was conducted with college students).

The LES items were chosen to represent life change frequently experienced by individuals in the general population. Many of the items are based on existing life stress measures, particularly the SRE. Others were included because they were judged to be events that occur frequently and that potentially might exert a significant impact on the lives of persons experiencing them. Thirty-four of the events listed in the LES are similar in the content to those found in the SRE (Holme & Rohe, 1967). In the construction of this scale, however, certain items were made more specific, All the events in LES can be categorized as follows:

Events related to Family: Death, illness, losses, gains and changes in closeness of the family members.

Events related to marital and sexual relationships: Marriage, Divorce, health and working conditions of the spouse and changes in interpersonal relationship, sexual difficulties.

Events related to finance, losses, gains, borrowing and investing in recreational activities. Events related to friend: Death or illness of friend, breaking up and reconcilation with friend.

Events related to person himself: Major personal illness, change in eating,sleeping, social and recreational activities, working conditions and living conditions.

Lastly, events related to the academic life. Begining a new school experience, failing an exam, droping a course, Being dismissed from dormatory or other residence, Financial problems concerning school etc.

We can further categorise all these events into two broad categories that is exogenous events and endogenous events.

The format of the LES calls for subjects to rate separately the desirability and impact of events that they have experienced. Thus they are asked to indicate those events experienced during the past year as well as (a) whether they viewed the event as being positive or negative and (b) The perceived impact of the particular event on their life at the time of occurance. Rating is done on a 7-point scale ranging from extremely negative (-3) to extremely positive (+3). Summing the impact ratings of those events designated as positive by the subject provides a 'positive change score'. A 'negative change score' is derived by summing the impact ratings of those events experienced as negative by the subject. By adding these two values, a 'total change score can

obtained, representing the total amount of rated change (desirable and undesirable) experienced by subject during the past year.

Two test-retest reliability studies of the LES have been conducted. Both involved subjects drawn from undergraduate psychology courses with a 5 to 6 week time interval between test and retest. Responses were scored for positive, negative and total life changes in each case. It was found that test-retest correlation coefficient for positive change score were .19 and .53 (P .001), for negative change score were .56 (P .001) and .88 (P .001), and for total score were .63 and .64 (P .001).

LES scale has been developed in the USA. Since the scale has not been used much in the country, we thought it necessary to determine if items on the scale are meaningful in this culture. Therefore in order to evaluate the relevance of the item on the scale a pilot study was conducted, twentyeight subjects (Teachers and Research Scholars of the Aligarh Muslim University) participated in the study. They were requested to go through each item of the scale carefully and to indicate if in the Indian context the item was pertinent. In other words, rough content analysis was conducted. The participants indicated the relevance of the item by

marking 'R' against it if appeared relevant and 'I' if it did not appear relevant. To be retained, an item had to be marked relevant by more than 50% of the respondents. In the end, no item had to be dropped (Appendix-A). The blank spaces in which the subject could fill up items which he thought to be important filled any lacuna which could have occurred due to distinctive human experience.

Self-rating Depression Scale

The instrument used for the quantitative measurement of depression is the Zung's self-rating Depression Scale (SDS). It was first published in 1965, in a series of reports on patients with depression and other emotional disorders. Further studies on depression in the aged and on factors influencing the scale were published in 1967. Although devised for use in psychiatric research, the scale lends itself to use in the general practice of medicine where most depressions are first encountered. Use of the scale in a variety of patients with physical complaints without apparent organic basis may uncover and measure depression in the so-called "hidden depressions" - saving valuable time in the clinic and several sessions of probing interviews. Testing and scoring patients usually requires less time. Statistical studies indicate that measurements so obtained

correlate reliably with other more time consuming depression rating scales in current use.

The Zung's SDS contains a list of twenty items that tap effective, biological and psychological functioning. Each relates to a specific characteristic of depression. The twenty items comprehensively delineate widely recognized symptoms of depressive disorders. Adjacent to the statements are four columns headed - 'None', 'A little of the time', 'Some of the time', 'Good part of the time', and 'Most or All of the time'. The patient is asked to put a check mark in the box most applicable to at the time of the test. To obtain the patient's depression rating, the completed scale is placed under the transparent Key for scoring and the indicated value for each item is written in the margin and totalled. This raw score is then converted to an index based on 100. The scale is so constructed that a low index indicates little or no depression and a high index indicates depression of clinical significance.

Certain safeguards, common to psychological tests are incorporated in the statements and in the headings of the rating columns. The patient is unable to discern a trend in his answers because half of the statements are worded symptomatically positive and half are worded symptomatically negative. For example, the item, I feel

downhearted and blue, is a positive. The item, Morning is when I feel the best, is a negative statement, reflecting the opposite of the way most depressed patients feel, which is worst in the morning.

Diagnoses of patients with depression, anxiety reaction, personality disorders were first established separately by other clinicians prior to obtaining depression ratings with the SDS. The mean index of a series of previously diagnosed hospitalized depressed patients was over 70 and was over 60 for previously diagnosed depressed outpatients. Low ratings (40 and below) obtained in normal controls indicated that little or no depression was present. Indices above 50 were obtained in several patients with various, known emotional disorders. As with patients with other illness, such scores (in excess of mean SDS indices for normal controls) suggest consideration of treatment of the depression whether it is the primary or secondary diagnosis or only symptomatic. In the first cross-cultural study of the Zung scale (Self-rating Depression Scale, SDS), Zung (1969) found that his twenty-item symptom frequency checklist correlated highly with physicians' ratings of depression in England (.65), Australia (.52), Germany (.51), Czechoslovokia (.50), Switzerland (.45) and Japan (.43).

Depression ratings with standard psychometric scale were also obtained prior to testing the SD scale. In all patients there was a high correlation between SDS scores and scores obtained with other tests (Zung). Marsella, Sanborn, Kameoha, Shizuru, and Brennan (1975) compared five depression.scales (Beck Depression scale, Katz-Hogarty Depression scale, Multiple Affect Adjuctive checklist, MMPI Depression Scale, and Zung Depression scale) on samples of normal male and female caucasian-Americans, Chinese-Americans and Japanese-Americans. They cross validated the measures against one another for each of the six subgroups. The measures correlated highly for the caucasian males and females, the Japanese males and females; however, the correlation dropped for the chinese males. Most of the correlation were around .60 for the previous groups.

The self-rating Depression Scale have been used in cross-cultural studies of depressive symptomatology among a normal adult population (Zung, 1972; Kinzie, Ryals, Cottington, and McDermott, 1973) and in the cross-cultural survey of depressed psychiatric patients (Zung, 1969). Zung and Master have validated this scale in India in 1975 and it has been used in identifying the depressed individuals by Marsella, Kinzie and Gordon (1973).

Sample

A total of 200 male and female postgraduate students enrolled in Aligarh Muslim University were selected randomly from the population of more than two thousand postgraduate students studying in science, social science and Arts Faculty. All students were doing non-technical courses i.e. M.A., M.Sc. They ranged in age between 18 years to 25 years. This age group is selected because this period is thought most crucial. All the important decisions about future life are made at this stage. The person has to assume responsibilities of the society. In order to have a better and prosperous future life the individual has to make the selection of better course or job and the selection of a nice mate. At this stage the individual thinks himself responsible, while making any kind of decision, for success and failure. The most important feature of this period is that there is shift in responsibility. During childhood parents and other elders were thought responsible for any kind of decision and now the individual is considered responsible for everything whether right or wrong. They can no longer seek help in meeting their demands and solving their problems as they were able to do when they were younger. Anna Freud points out that many failures, often with tragic consequences in these respects, are due not

to the individual's incapacity as such but merely to the fact that such demands are made on him/her at a time in life when all his energies are engaged otherwise, namely, in trying to solve the major problems created for him by normal sexual growth and development.

Data Collection

Students were administered self-rating depression scale and Life Experience Survey. The primary aim of the screening procedure was the selection of a diverse sample of persons with and without depressive symptomatology. The SDS, a list of 20-items that assess a variety of features of syndromes of depression, was administered to evaluate the severity of depressive symptomatology.

Life experience survey was administered to evaluate the incidence of stress in the subjects. Both the scales, SDS and LES were administered at the sametime.

Subjects were classified into four groups according to the severity of depression on the basis of score they obtained on SDS, as follows:

group	Range of SDS-index score
Normally depressed	25-43
Moderately depressed	44-49
Highly depressed	50-59
Severaly depressed	60-71

On the basis of the theoretical position with reference to depression and life-events, and relevant studies and literature, it appears justified to expect some relationships between depression score and LES score. Thus the hypothesis which the present investigator proposes to test may be termed as follows:

1. Increased Frequency of negative life-events are associated with the severity of depression.
2. Reduced frequency of positive life-events are associated with the severity of depression.
3. Total life changes (positive+negative life changes) are greater in pathologically depressed group.
4. Men and Women differ in depression and negative life events stress score.
5. Rural and Urban subjects differ in the incidence of depression and negative life-events stress score.

In order to throw further light on the nature of the events experienced as positive or negative by the two extreme groups namely the normally depressed and the pathologically depressed groups, an analysis of responses was done as shown in appendix B. This would enable us to get some indepth information about the nature of changes experienced as positive and as negative by two groups.

Statistical Analysis

In an attempt to test the hypothesis stated earlier the data were analysed by applying Median test.

The median test is a procedure for testing whether two imdependent groups differ in central tendencies. More precisely, the median test will give information as to whether it is likely that two independent groups (not necessary of the same size) have been drawn from populations with the same median. The null hypothesis is that two groups are from populations with the same median. The alternative hypothesis may be that the median of one population is different from that of the other (two tailed test) or that the median of one population is higher than that of the other (one tailed test). The test may be used whenever the scores for the two groups are in atleast an ordinal scale.

With regard to power efficiency Mood (1954) has shown that when Median test is applied to data measured in at least an interval scale from normal distributions with common variance, its power efficiency is about 95 per cent for n_1+n_2 as low as 6. This power-efficiency decreases as the sample sizes increase, reaching an eventual asymptotic efficiency of $2/\pi$ = 63 per cent.

These considerations and the type of data, sample size and hypotheses led the investigator to apply median test for analysing the data and determining the significance of difference between groups on depression and negative life-events stress score.

RESULT AND DISCUSSION

The final stage of any investigation is to analyse data, draw inferences and to meaningfully interpret the findings. The choice of the statistical method is linked to the type of data and the design of the study. This issue has been elaborated extensively in the preceding chapter. Because the groups studied were divided unequally, and the direction in which the variables was operating was to be determined, the median test was applied.

The hypotheses set by the investigator in the preceding chapter were tested one by one, as follows:

Hypothesis 1

Increased frequency of negative life events is associated with the increased severity of depression.

In order to test this hypothesis subjects were classified into four groups according to severity of the depression on the basis of the score they obtained on the SDS. Scores falling between 25-43 are indicative of a 'normal' degree of depression; SDS Score between 44-49 indicate the 'moderately depressed', that is slightly more than normal depression; SDS score between 50-59 indicate the highly depressed; and SDS score between

TABLE I

Negative Life-events stress

	Normally depressed 25-43	moderately depressed 44-49	highly depressed 50-59	Severely depressed 60-71	
M.P.9.5	16	24	46	13	99
	(39.1)	(26.13)	(26.73)	(6.43)	
	63	30	8	0	101
	(39.9)	(27.27)	(27.27)	(6.57)	
	79	54	54	13	200

df = 3

x^2 = 68.33

x = .001

P = 16.27

50-59 indicate the highly depressed; and SDS score between 60-71 indicate the severely depressed. All the four groups of subjects were compared on the incidence of negative life events score.

Table 1 shows the position of the four groups of subjects in terms of the median score. The combined median for negative life-events stress score came to 9.5. The subjects in each group are divided into two categories on the basis of this score. The score which exceeds 9.5 lies above the median and the score which is equal to or less than 9.5 lies below it. In this way we found the distribution of subjects as follows:

group	above median	below median
normal depression group	20%	80%
moderately depressed group	44%	56%
highly depressed group	85%	15%
severely depressed group	100%	0%

The computed chi-square value for negative life-events stress score for four groups of subjects amounted to $x^2 = 68.33$. This value is very large as compared to the value ($x^2 = 16.27$) needed to be significant at $x = .001$ level. So, our value is highly significant at $x = .001$ level. It brought out that all the four groups differ significantly on the incidence of negative life-

TABLE II

Positive Life Events

	Normally Depressed 25-43	Moderately depressed 44-49	Highly depressed 50-59	Severely depressed 60-71	
	51	25	19	5	100
	(39.5)	(27)	(27)	(6.5)	
MP.12.5					
	28	29	35	8	100
	(39.5)	(27)	(27)	(6.5)	
	79	54	54	13	200

$x^2 = 12.44$

$x = .01$

$df = 3$

$P = 11.34$

event stress score. Results also point out that increased frequency of negative life-events is associated with the increased severity of depression.

Hypothesis II

The reduced frequency of positive life-events is associated with the increased severity of depression.

In order to test this hypothesis we compared all the four groups of subjects: normal, moderately depressed, highly depressed, and severely depressed, on the incidence of positive life-events score.

Table II, shows the distribution of four groups of subjects in terms of the median score. The combined median for positive life-events score came to 12.5. On the basis of this score subjects in each group were dichotomized. Those whose score exceed 12.5 lie above median and those whose score is equal to or less 12.5 lie below it. In this way we found the distribution of subjects as follows:

groups	above median	below median
normally depressed group	65%	35%
moderately depressed group	46%	54%
highly depressed group	35%	65%
severely depressed group	38%	62%

TABLE III

Total Life Events

	Normal	Depressed	
	18	49	67
M.P.25			
	61	18	79
	79	67	146

df = 1

$x^2 = 35.4$

$x = .001$

P = 10.83

The chi-square value computed for four groups of subjects for positive life-event score amounted to x^2 = 12.44. This value is larger than the value (x^2 = 11.34) needed to be significant at x = .01 level. Thus our observed value of chi-square is highly significant at x = .01 level. It shows that all the four groups of subjects differ significantly on the incidence of positive life-events and also makes clear that reduced frequency of positive life-events is associated with the severity of depression.

Hypothesis III

Total life-changes (positive+negative life changes) are greater in the pathologically depressed group.

In order to examine this hypothesis the two extreme groups of subjects: normal and pathologically depressed group (highly+severely depressed subjects) were compared on scores on total life-changes, both positive and negative.

Table III, shows the position of the subjects in terms of the median score. The combined median for total life changes came to 25. Subjects in each group were casted into 2x2 contingency table on the basis of this score. Those whose score exceeds 25 lie above the median and those whose score is equal to or less than 25 lie below it. In this way we found the distribution of subjects as follows:

TABLE IV

Depression Score

	Male	Female	
	44	51	95
M.P.46			
	53	47	100
	97	98	195

df = 1

x^2 = 0.60

x = .05

P = 3.84

groups	above median	below median
normally depressed groups	23%	77%
pathologically depressed groups	73%	27%

The chi-square value computed for total life-changes for two groups amounted to $x^2 = 35.4$. This value is very large as compared to the value ($x^2 = 10.83$, with df = 1) needed to be significant at x = .001 level. Thus our observed chi-square value is highly significant at x = .001 level, which means that the two groups of subjects differ significantly on the incidence of total life-events change; this is indicative of a higher incidence of total life-event changes in pathologically depressed group as compared to the normal group.

Hypothesis IV

Men and women differ in depression and negative life-event stress score.

In order to test this hypothesis we compared the male and female subjects on the incidence of depression and negative life-event stress score.

Table IV shows the position of male and female groups of subjects in terms of the median score. The combined median for the two groups for depression came to 46.

TABLE V

Negative Life-Events

	Male	Female	
M.P. 10	34	52	86
	63	46	109
	97	98	195

df = 1

x^2 = 3.2

x = .05

p = 3.84

Subjects in each group were divided into two categories on the basis of this score. The score which exceeds 46 lies above the median and the score which is equal to or less than 46 lies below it. In this way we found the distribution of subjects as follows:

groups	above median	below median
Male	45%	55%
Female	52%	48%

The chi-square computed for the two groups for depression amounted to $x^2 = .6$. This value is far less as compared to the value ($x^2 = 3.84$) needed to be significant at the .05 probability level. Therefore results point out that males and females do not differ significantly on their scores on depression.

In order to examine the subjects on the incidence of negative life-event stresses we compared the male and female subjects on their score on LES.

Table V shows the position of subjects in terms of the median score. The combined median for negative life-events stress score for two groups came to 10. Subjects in each group were divided into two categories. The score that exceeds 10 lies above the median and the score that is equal to or less than 10 lies below it.

In this way we found the distribution of subjects, as follows:

group	above median
Male	35%
Female	53%

The chi-square value computed for two groups of subjects for negative life-event stress score amounted to $x^2 = 3.2$. This value is small than the value ($x^2=3.84$) needed to be significant at x = .05 level. Thus our observed value of chi-square is quite insignificant at x = .05 level. It points out that the two groups of subjects do not differ significantly; On the incidence of negative life-event stresses. Although female group showed the higher incidence of negative life-event stresses as compared to male group, yet this mere difference cannot be ascribed to male/female variable.

Hypothesis V

Rural and urban subjects differ in the incidence of depression and negative life event stress score.

In order to this hypothesis we compared rural and urban subjects on the incidence of depression and negative life-events stress score.

TABLE VI

Depression Score

Rural	Urban	
34	60	94
42	59	101
76	119	195

df = 1

x^2 =0.6

x = .05

P = 3.84

In order to this hypothesis we compared rural and urban subjects on the incidence of depression and negative life-events stress score.

Table VI shows the distribution of subjects in terms of the median score. The combined median for rural and urban subjects for depression came to 46. Subjects in each group were divided into two categories on the basis of this score. In this way we found the distribution of subjects as follows:

group	above median	below median
Rural	45%	55%
Urban	50.4%	49.6%

The computed value of chi-square for two groups for depression amounted to $x^2 = .6$. This value is very small as compared to the value ($x^2 = 3.84$) needed to be significant at probability $x = .05$. Thus our observed value of chi-square is quite insignificant at $x = .05$ level. It makes it clear that rural and urban subjects do not differ significantly on the incidence of depression.

While investigating the relationship of stress with rural/urban variable we compared the rural and urban subjects on the incidence of negative life-event stress score on LES.

TABLE VII

Negative Life-Events

Rural	Urban	
30	55	85
46	64	110
76	119	195

df = 1

x^2 = 0.6

x = .05

P = 3.84

Table VII shows the position of the two groups of subjects in terms of the median score. The combined median for the two groups for negative life-events stress score came to 10. Subjects in each group were divided into two categories on the basis of this score. The score that exceeds 10 lies above median and the score that is equal to or less than 10 lie below median. In this way we found the distribution of subjects as follows:

group	above median	below median
Rural	39.5%	60.5%
Urban	46%	54%

The Chi-square value computed for two groups for negative life-event stress score amounted to $x^2 = .6$. This value is very small as compared to the value ($x^2 = 3.84$) needed to be significant at the probability level ($x=.05$). Thus our observed value of Chi-square is quite insignificant at $x = .05$. It points out that rural and urban subjects do not differ significantly on the incidence of negative life-events stress.

Discussion

Five hypotheses had been set by the investigator to bring to light the various aspects of relationships between life events and depression. The primary question before the investigator was to probe the stressful life-events in individuals manifesting depression within the normal limits and those manifesting pathological levels of depression. Since it was pointed out by theorists (Sarason, De Monchaux & Hunt 1975) that negative life-events as such have distinct implications for personality, and by other theorists (Homes and Rahe, 1967) that the impact of any change be it negative or positive is stressful, we investigated negative life-events as well as positive life-events and the cummulative impact of both positive and negative life-events in depression.

The first question was whether increased frequency of negative life-events is associated with an increased severity of depression. We observed that scores on negative life-events as reported by the four groups (normally depressed group, moderately depressed group, highly depressed group and severely depressed group) differed very significantly. Only 20 per cent of the group that had obtained a score on depression that was within the normal range (25-43) obtained a score on stressful life-events that was above the obtained median value i.e. 9.5. In the severely depressed group (depression score, 60-71), 100 per cent subjects obtained a score on negative life-events that fell above the

obtained median. In the moderately depressed group (depression score, 44-49) and the highly depressed group (depression score, 50-59) the score on negative life-events lay 44 per cent and 85 per cent above the median respectively. Thus with increased severity of depression the negative life-events reported by the subject became higher. The chi-square value computed for the negative life-events stress score for the four groups came to 68.33 which is significant at .001 probability level. We can safely conclude that increased frequency of negative life-events have been found associated with increase in the severity of depression. Hypothesis one has, therefore, been sustained by our results.

If we observe the detailed break up of negative life-events as experienced by the normally depressed and the pathologically depressed groups, we find that in certain areas the difference between the two groups is more marked. In personal habits and conditions, in financial status and related problems, and in social interactions both within and outside of the family. The pathologically depressed subjects experienced a greater degree of negative overtones and consequent stress as compared to the normally depressed. The details become

clear on referring to appendix B. Both in sleeping and eating habits and personal health, all changes reported by the pathologically depressed are negative experiences. In the case of the normally depressed group the changes in these areas are experienced both at the positive and negative level. Changes in other areas follow the same pattern.

We also noted that in the pattern of responding, the pathologically depressed group by and large adopt an extreme position, whereas the normally depressed group takes a position at varying points of the scale. On the 7-point scale ranging from +3 to -3 we find that extreme responses to items follow the pattern given below:

Item	Percentage of Extreme Responses given by pathologically depressed group	Percentage of Extreme Responses given by Normally depressed group
1. Major changes in sleeping habits	90	13
2. Major changes in eating habits	73	28
3. Major personal illness	50	0
4. Changes in social activities	67	43
5. Leaving home for the first time	78	44
6. Serious illness of a close family member	75	43

Hypothesis two namely that reduced frequency of positive life-events is associated with the increased severity of depression was investigated by comparing all the four groups of subjects on the incidence of positive life-event score. It may be observed that in the normally depressed group 65% subjects have obtained a score on positive life-events which lies above the median value (12.5). The severely depressed group shows an incidence of 38% score above the median. In the moderately and highly depressed group the positive life-event score above the median is 65% and 46% respectively. The chi-square value computed for the four groups for positive life-event score came to 12.44 which is significant at .01 level. It shows that pathologically depressed people have experienced positive events with lesser frequency. Hypothesis II, has, therefore, been sustained by our results. The incidence of positive responses given to six items by the two groups serves to illustrate how pathologically depressed people have experienced positive events with lesser frequency.

Items	Percentage of positive responses given by the pathologically depressed group	Percentage of positive responses given by the Normally depressed group
1. Major changes in sleeping habits	0	62
2. Changed work situation	50	100

3. Changes in closeness of family members	22	83
4. Change in amount of recreation	43	100
5. Changes in living conditions of family	67	89
6. Changes in social activities	33	71

It is interesting to note that on certain items the experiences of positivity is shared by the two groups. These items are 'Gaining a new family member', 'Joining a fraternity' (in which 100% responses of both groups were termed positive) and illness of friend Major personal illness (in which none of the respondents of either group gave a positive response). We notice that by and large these items, where the experiences reported by the two groups seem to be in concordance, were by and large factual situations with little possibility of personal interpretation. In contrast to statements which involve a view point or opinion like reconcilation with friend etc. personal illness, the illness of friend and the addition of a new family member are concrete realities. However it is interesting to note that the perception of these realities has been on a similar vein; it was quite possible that these factual realities could have been perceived differently by the two groups. But the implications of illness whether

personal or that of friend are so unambiguously negative that there is little scope of assigning any other label but negative. The 'Gaining of a new family member' whether by marriage or by birth has implications of emotional positivity in all cultures particularly in the Indian culture. Furthermore, the depressed with his feelings of isolation and loneliness may perhaps be viewing the coming of a new comer with optimism and the hope of greater emotional warmth. In another item namely that of 'outstanding achievement' we fill find that the total score of each of the two groups was positive, without any negative score. It is however interesting to note that the score of the pathologically depressed group was only 3 and that of the normally depressed group was 17. This brings to mind the various studies which have brought to light that the highly depressed usually underestimate themselves. Their self-evaluation places them at a lower position than estimates of them made by other observers (Wener & Rehm, 1975). This score is therefore not indicative of their actual personal achievement, but their perception of their achievement. For our purpose this in itself is the major index in question, for it is the subjective experience of the concerned individual that is indicative of his personality more than the actual achievements made by him. On some other occasion, when

we would extend the limits of an investigation to cover phenomena like actual and perceived self discrepancies and their impart on depression, both aspects (actual achievement and perceived achievement) may need to be studied.

The third hypothesis namely the total life changes (positive and negative) are greater in the pathologically depressed group is supported by the views of Holms and Rahe. According to this approach changes of any sort, place a demand on the individual which contributes to cummulative feelings of stress. When the total life changes score of the 'Normally depressed' and 'Pathologically depressed' were compared. The chi-square value computed came to 35.4. This value is significant at .001 level (for df = 1 a value of 10.83 would be significant at ,001). Thus the pathologically depressed group of which 73% obtained the score above the median value and the normally depressed group of which only 23% subjects obtained a score above the median, differed significantly, with the pathologically depressed group showing a higher number of total life changes. There are certain events on which the total impact of change is very markedly different in the two groups. This will be more clear from the information given below:

Item	Total score of pathologically depressed group	Total score of Normally depressed group
1. Changes in sleeping habits	29	13
2. Changes in eating habits	26	10
3. Changes in church, mosque activities	10	2
4. Changes in amount of recreation	15	8
5. Major personal illness	20	5
6. Changes in social activities	31	15
7. Breaking up with boy friend/girl friend	24	3
8. Outstanding personal achievement	3	17
9. Changes in living conditions of family	10	22

We observe that in a variety of situation like major change in sleeping habits, eating habits, religious activities, recreation, personal illness, social activities, as well as opposite sex relationships the total number of changes experienced by the pathologically depressed group is much larger than changes experienced by normally depressed groups. Of interest to note is the fact that in some areas, namely that of 'outstanding personal achievements

'Changes in living conditions of family', the normally depressed group shows a higher changes score than pathologically depressed group. The aspect of 'outstanding personal achievement' has already been discussed. As far as the other aspects mentioned are concerned one feels that they may perhaps not be applicable to the same degree to the pathologically depressed as they are to the normally depressed. 'Changed work situation', 'Changes in living conditions of the family' will probably not be the responsibility of a person who is depressed to the extent of being pathological. True h hospitalization of even the pathologically depressed is not common in our country due to limited awareness as well as limited facilities in the psychiatry departments. But subjects whom we have designated as pathologically depressed are individuals who in other cultures are considered as needing hospitalization. Within the family milieu the onus of responsibility for decisions regarding living conditions, work situations etc., would not be placed on members suffering from severe depression, in fact the family would ensure that if changes in family life style were necessiciated, the person already suffering would be protected from being exposed to drastic change, therefore, it is natural that the pathologically depressed would show a lesser total score in these areas.

Coming to hypothesis four, which states that men and women differ in depression and negative life-event stress score, we observe that the chi-square value obtained in both cases was insignificant. The chi-square computed for the two groups for depression amounted to .6 and for life-event stress score to 3.2. Neither of the values is significant.

Initially we were led to formulate this hypothesis on the basis of studies which had indicated a difference between men and women in the tendency towards depression. Cultural role restriction is forwarded as a possible explanation for this difference. Thus, according to this theory women, due to a restraint inculcated in them are not in the habit of expressing aggression, personal reactions with the same freedom as men, leading to enhanced depression (Rothblum, 1984). However if we examine most of the work done to compare the sex variable on depression, we find that the sample is not drawn exclusively from the highly educated strata. On the other hand, the subjects in our study are all graduate or post-graduate students. Thus the factor of restrained communication and inhabitions is drastically minimized due to the nature of experiences one is exposed to in higher education. This may probably be the reason why no difference was observed. Thus education with its vast opportunities of self-expression and self-confidence may be an important means to level out sex differences of 'cultural role' origin.

In terms of negative life event stress score again the value is insignificant. This means that the perceptions and cognitions of women do not differ from men in the manner that is usually presumed. It is also a cultural stereotype to think of women as hypochondriacal, unduely worried and prone to imagining the worst. Women seemed to have no greater tendency than men to view life-events as negative. Again this may be because the women in our society sample are graduate and post-graduate students. They remain engaged in challenging, meaningful activities which gives them a sense of achievement and self-confidence. Thus we may conclude that no sex difference was observed in the sample of study in terms of depression or life-event score. The investigator feels that the difference in depression score reported in earlier studies is not a basic, intrinsic, difference between the sexes but of cultural origin, and education can level this difference.

Hypothesis five stated that rural and urban subjects differ in the incidence of depression and negative life-event stress score. The chi-square value computed for the two groups for depression amounted to 0.6 and the value computed for negative life-event stress score also came to 0.6. In both cases the value was extremely insignificant.

In the Indian milieu, the rural urban factor is an important biographical variable, in fact a large number of

problems of contemporary Indian life emerge from mass urbanization leading to overcrowding of cities on the one hand & adjustment problems of migrant rurals on the other. The rural way of life is vastely different from the urban and those from the rural background have to manifest a greater degree of adjustibility to cope with the new situation. For countries in transition this is a crucial phase. At the present moment, things have settled down to some extent and the government emphasis of expanding all facilities in the rural area itself, has placed a check in the exodus from the villages to the cities. But still it was felt that perhaps the rural section of the sample, due to its greater effort in coping and adjusting may show a higher depression score or negative LES score than the urban. Our results however do not support our line of reasoning. We do not have the indices, but probably since our subjects were university students and had spent many years in the schools and universities of the urban area the phase of trying of adjustment was already over. But as the investigator has already pointed out since we do not have the indices of amount of time spent in urban surroundings to shed more light on the issue, the available information which unequivocally points out to no difference between rural and urban sample should be taken to reflect the state of affairs on this matter. Thus we may conclude that hypothesis V, has not been sustained by our investigation.

Implications of this Study and Suggestions for further Research

The first important question that any investigator should put to himself is what is to be gained by the work that he has undertaken, who is going to benefit from it.

Of course, the first important gain from any meaningful research is that some little bit is added to knowledge and information. We get to know something about our ownselves and about human dynamics. This intrinsic human urge to unravel the unknown is satisfied. If the work done can be directly useful to us, all the more better. The present investigation has thrown important light on the manner in which perceptions and cognitions of life events may vary in the normal individuals and pathologically depressed persons. We are of course not in a position to suggest a causal relationship of whether a particular manner of perceiving life-events leads to depression, or the level of depression determines the perception of life-events in a particular manner. But two points of the investigation have important implications. Whereas earlier studies had pointed out a difference amongst men and women in the level of depression our study did not indicate any difference between the sexes. The distinctive factor in the study which offers a reasonable explanation for this absence of difference is the factor of education

which possibly levelled the culturally induced differences between the sexes. This strengthens the case for education of women in order to achieve equality, not merely at the economic or political level but at the psychological level. The fact that urban and rural subjects did not differ significantly, also deserves mention. It is indicative of the onset of stabilization in the Indian society from the turmoil of transition. At least we can say that by the time higher education is reached, the rural and urban students fall at the same level of adjustment, and differences if any become levelled. Much however remains to be understood in the area. Other pertinent variables, both personality and social, need to be investigated to throw light on the phenomena of depression. With the monumental increase in the incidence of depression this should feature in the psychologist's agenda prominently. To what extent early life experiences, parental attitude, feelings of self-worth successes and failures etc. contribute to depression should be studied, so that some steps in minimizing it can be worked out. This would not only be a contribution academically but would also help to fulfil to some extent the duty which as social scientist we owe to society.

APPENDIX A

Item No.	Percentage of respondents indicating that the item is relevant
1. Marriage	96%
2. Detention in Jail or comparable institution	82%
3. Death of spouse	78%
4. Major change in sleeping habits (much more or much less)	75%
5. Death of a close family member	89%
6. Major change in eating habits (much more much less foodintake)	57%
7. Foreclosure on mortgage or loan	62%
8. Death of a close friend	82%
9. Outstanding personal achievement	96%
10. Minor Law violating (traffic tickets, disturbing the peace etc)	71%
11. Male: wife/girl/friend's pregnancy	66%
12. Female pregnancy	82%
13. Changed work situation (different work responsibilities major change in working conditions, working hours, etc.)	71%
14. New job	68%
15. Serious illness or injury of a close family member	93%
16. Sexual difficulties	75%
17. Trouble with employer (in danger of losing job, being suspended, denoted, etc.)	71%

18. Trouble with in laws	78%
19. Major change in financial (lot of better-off or lot of worse-off)	82%
20. Major change in closeness of family members (increased or decreased closeness)	75%
21. Gaining a new family member (through birth, adoption, family members moving in etc.)	89%
22. Change of residence	78%
23. Major change in Church, mosque, temple activities (increased or decreased)	71%
24. Marital separation from mate (due to conflict).	54%
25. Marital reconcilation with mate	62%
26. Major change in number of arguments with spouse (a lot more or a lot less arguments).	62%
27. Married Male: Change in wife's works outside the home (begining work, acrosing work, changing to a new job etc.).	50%
28. Married female: Change in husband's work (loss of job, begining new job, retirement etc.)	62%
29. Major change in usual type and/or amount of recreation	71%
30. Borrowing more than $ 10,000 (buying home business et.c).	54%
31. Borrowing less than $ 10,000 buying T.V., getting school loan, etc.	50%
32. Being fired from job	71%
33. Male: Wife/girl friend having abortion	51%
34. Female: having abortion	62%

35. Major personal illness	86%
36. Major change in social activities (e.g. parties, increased or decreased participation).	71%
37. Major change in living condition of family (building new home, remodelling, deterioration of home neighbourhood etc)	86%
38. Divorce	75%
39. Serious illness or injury of close friend	89%
40. Retirement from work	68%
41. Son or daughter leaving home (due to marriage college etc.)	75%
42. Ending of formal schooling	75%
43. Separation from spouse (due to work travel etc.)	71%
44. Engagement	89%
45. Breaking up with boy friend/girl friend	71%
46. Reconcilation with boy friend/girl friend	82%
home	
47. Leaving/for the first time	82%
48. Begining a new school experience at a higher academic level (College, graduate school, professional school etc.)	93%
49. Changing to a new school at same academic level (undergraduate, graduate etc.)	82%
50. Academic probation	68%
51. Being dismissed from dormatory other residence	71%
52. Failing an important exam	89%
53. Changing a major	62%
54. Failing a course	78%

55. Dropping a course	82%
56. Joining a fraternity/sorority	68%
57. Financial problems concerning school (in danger of not having sufficient money to continue).	93%

* * *

Appendix B

	Pathologically Depressed (n_1)			Normally Depressed (n_2)		
	Total Score	Negative Score	Positive Score	Total Score	Negative Score	Positive Score
	1	2	3	4	5	6
1. Marriage	2		2			
2. Detention in jail	2	-2		3	3	
3. Major change in sleeping habits	29	29		13	4	9
4. Death of close family member	26	26		20	15	5
5. Change in eating habits	26	26		10	8	2
6. Death of close friend	7	7		3	3	
7. Outstanding personal achievement	3		3	17		17
8. Law violation	2	2		5	3	2
9. Changed work situation	11	5	6	14	1	13
10. Serious illness of close family member	21	21		13	12	1
11. Sexual difficulties	1	1		2	2	
12. Major change in financial status	16	9	7	14	1	13
13. Changes in closeness of family members	23	17	6	14	3	11

	1	2	3	4	5	6
14. Gaining a new family member	15		15	14		14
15. Change of residence	9	5	4	10		10
16. Major change in Church, mosque activities	10	2	8	2	1	1
17. Change in amount of recreation	15	-8	7	8		8
18. Major personal illness	20	20		5	5	
19. Change in social activities	31	23	8	15	4	11
20. Changes in living conditions of family	10	2	8	22	3	19
21. Illness of friend	5	5		6	6	
22. Engagement	7	3	4	4	3	1
23. Breaking up with boy friend/ girl friend	24	24		3	2	1
24. Leaving home for the first time	24	18	6	19	9	10
25. Begining a new school experience	22	5	17	20		20
26. Changing to a new school at same academic level	1		1	3		3
27. Academic probation						
28. Being dismissed from dormatory or other residence	6	6				
29. Failing an important exam	14	14		9	9	

	1	2	3	4	5	6
30. Changing a major	3		3			
31. Failing a course	15	15				
32. Dropping a course	9	6	3	2	2	
33. Joining a fraternity/sorovity	3		3	5		5
34. Financial problems concerning school	23	23				
35. Failing an important worth	3	3				
36. Reconcilation with friend				4		4

Bibliography

Abraham, K. Notes on psychoanalytic investigation and treatment of manic-depressive insanity and allied conditions (1911). In selected papers on psychoanalysis. New York: Basic Books, 1960, pp.137-156.

Appley, M.H. and Trumbell, R. Psychological Stress. Appleton-Century Crofts, New York, 1967.

Arieti, S. Manic-depressive psychosis. In S. Arieti (Ed.), American Handbook of Psychiatry. Vol. 1, New York: Basic Books, 1959. pp. 419-454.

Bagadia, V. Jeste, D., Davie, K., Doshi, S., & Shah, L. A prospective epidemological study of 233 cases of depression. Indian Journal of Psychiatry, 1973, 15, 209-231.

Bibring, E. The mechanism of depression, in P. Greenacre (Ed.), Affective disorders. New York: International Universities Press, inc., 1965, pp.13-48.

Bliss, E.L., Migeon, C.J., Branch C.H. & Samuels, L.T. Reaction of adrenal cortex to emotional stress. Psychosomatic Med., 1956, 18, 56-76.

Board, F., Wadeson, R., & Persky, H. Depressive affect and endocrine functions: Blood levels of adrenal

cortex and thyroid hormones in patients suffering from depressive reactions. Arch. Neurol. Psychiat., 1957, 78, 612-620.

Board, F., Persky, H., & Hamburg, D.A. Psychalogical stress and endocrine functions: Blood levels of adrenocortical and thyroid hormones in acutely disturbed patients. Psychosom. Med., 1956, 18, 324-333.

Bunney, W.E., Jr., Mason, J.W., & Hamburg, D.A. Correlations between behaviour variables and urinary 17-hydroxycorticosteroid in depressed patients. Psychosom. Med., 1965, 27, 299-308.

Bunney, W.E., Jr., Hartmann, E.L., & Mason, J. W. Study of a patient with 48-hour manic depressive cycle. Strong positive correlation between endocrine factors in manic defense patterns. Arch. gen. psychiat., 1965, 12, 619-625.

Contance Hammen, Arlene Mayol, Mayol Robert Demayo and Terry Marks. Initially symptom levels and the life-event Depression Relationship. Journal of Abnormal psychology, 1986, vol. 95(2), 114-132.

Cox, T., and Mackay, C.J. A psychological model of occupational stress. A paper presented to Medical Research Council meeting Mental Health in Industry. London, 1976, November.

Devereux, G. Mohave ethnopsychiatry and sucide: The psychiatric knowledge and the psychic disturbance of an indian tribe. Washington, D.C. : Smithsonian institution Bureau of American Ethnology, No. 1975, 1961.

Eastman, C. Behavioural formulations of depression Psychological Review, 1976, 83, 277-291.

Falret, J.P., Sr., "Lecons", Gar. d. Hop., 1851, 249, 1854, quoted in Jelliffe, S.E. Some Historical phases of the manic Depressive Synthesis, "in Manic Depressive Psychosis, vol. XI, Willians & Wilkins, Baltimore, 1931.

Ferguson, H.C., Bartram, A.C., & Fowlie, H.C. A preliminary investigation of steriod excretion in depressed patients before and after electro-convulsive Therapy. Acta Endocr. (Kobenhaun), 1964, 47, 58-68.

Fox, H.M., Murawski, J.G., Bartholomay, A.F., and Gifford, S. Adrenal Steroid excretion patterns of 18 healthy subjects and tentative correlations with personality structure. Psychosomatic Med. 1961, 23, 364-376.

Frankenhaeuser, M. and Rissler, A. (1970). Catecholamine output during relaxation and anticipation. Percept. mot. skills, 30, 785.

Freud, S. Mourning and melancholia. London, Hogarth Press, 1955.

Freud, S. Mourning and melancholia. (1917), Reprinted in "Collected papers, vol. 4 London: Hogarth Press and the Institute of Psychonalaysis.

Gerald, C. Davison and John, M. Neale. Abnormal psychology: An Experimental Clinical approach (2nd ed.) New York, John Wiley & Sons, 1978.

Gibbons, J.L., Gibson, J.G. Maxwell, A.E., & Willcox, D.R.C. An endocrine study of depressive illness. J. psychosom, Res., 1960, 5, 32-41.

Gibbons, J.L., & McHugh, P.R. Plasma cortisol in depressive illness. J. Psychiat. Res., 1962, 6, 93-116.

Gobeil, O. El Susto: A descriptive analysis. International journal of social psychiatry, 1973, 19, 34-44.

Grinker, R., & Spiegel, J. Men under stress. New York: McGraw-Hill, 1945.

Halls, James, R.; Mathews, Lee,H. & Keeler Helen Demographics, stress and depression in community health screening. Journal of Psychology, 1984, vol. 118 (1), 45-50.

Harry, C. Triandis and Juris G. Draguns. Psycho-pathology: Handbook of cross-cultural psychology. Vol. 6. Allyn and Bacon, inc., Boston, Massachusetts. 1980.

Irwin G. Sarason and Charles D. Spielberger. Stress and Anxiety. Hemisphere publishing corporation, vol.2, Washington, D.C. 1975.

J. Mark. G. Williams. The psychological Treatment of Depression, London, Croom Helm, 1984.

Johnson, D., Johnson, C. Totally discouraged: A depressive syndrom of the Dokota Sioux. Trans-cultural psychiatric Research Review, 1965, 2, 141-143.

Joseph Mendels. Concepts of Depression. John Wiley & Sons, Inc. New York, 1970.

Kagan, A. and Levi, L. Adaptation of the psychosocial environment to man's abilities and needs. In Society, stress and Disease, 1971, vol. 1 (ed. L. Levi), Oxford University Press, London.

Kiev A. Curandismo: Mexican-American folk psychiatry- New York: Free Press, 1968.

Kinzie, J.D., Ryals, J., Cottington, F., & McDermott, J.F. Cross-cultural study of depressive symptoms in Hawaii, International Journal of Social Psychiatry, 1973, 19, 19-24.

Kraepelin, E. Psychiatric (5th ed.) Leipzig: Barth, 1896.

Lacey, J.I. (1967). Somatic response patterning and stress: some revisions of activation theory. In 'psychological stress' (eds. M.H. Appley and R. Trumbell), Appleton-century-crofts, New York.

Lazarus, R.S. (1976) Patterns of adjustment. McGraw-Hill, New York.

Michael, R.P., & Gibbons, J.L. Interrelationships between the endocrine system and neuropsychiatry. Int. Rev. Neurobiology, 1963, 5, 243-302.

Marsella, A.J., Kinzie, D., & Gordon, P. Ethnic variations in the expression of depression. Journal of cross-cultural psychology, 1973, 4, 435-458.

Marsella, A.J., Sanborn, K., Kameoka, V., Shizuru, L., & Brennan, J. Cross-validation of self-report measures of depression among normal populations of Japanese, Chinese, and Caucasian ancestry. Journal of Clinical psychology, 1975, 31, 281-287.

Mason, J.W. (1971). A re-evaluation of the concept of 'nonspecificity'in stress theory. J. Psychiat., Res., 8, 323.

Mason, J.W., Brady, J.V. The sensitivity of psycho-endocrine systems to social and physical environment. In "psychobiological Approaches to social behaviour" (P.H. Leiderman and D. Shapiro, eds) Stanford University Press, Palo Alto, California, 1964, pp.4-33.

Paykel, E.S. & Hollyman, Julie A. Life-events and depression: A psychiatric view. Trends in neurosciences, 1984, vol. 7 (12) 478-481.

Perris, Hjords. Life-events and depression: Relation to severity of the depressive syndrome. Journal of Affective Disorders, 1984 (Aug) vol. 7 (1) 37-44.

Peter, G. Bourne. The psychology and physiology of stress: With reference to special studies of the 'Viet-nam War'. Academic Press, New York, 1969.

Pryce, I.G. The relationship between 17-hydro-xycorti-costeroid excretion and glucose utilization in depression. Brit. J. Psychiat. 1964, 110, 90-94.

Rao, A. Depressive illness and guilt in Indian culture Indian Journal of psychiatry. 1973, 15, 231-236.

Rizzo, N.D., Fox, H.N., Laidlaw, J.C. & Thorn, G.W. concurrent observations of behaviour change and adrenocortical variation in a cyclothymic patient during a period of twelve months. Ann. Intern. Med., 1954, 41, 798-815.

Rothblum, Esther D. Women's socialization and the prevelence of depression: The famine mistake. Women & Therapy, 1984, vol. 1 (1) 5-13.

Rubel, A. The epidermiology of a folk illness Susto in Hispanic America. Ethnology, 1964, 3, 268-283.

Rubin, R.T. & Mandell, A.J. Adrenal Cortical activity in pathological emotional states: A review. Amer. J. Psychiat. 1966, 123, 387-400.

Samuel Henry Kraines. Mental Depression and Their Treatment, New York, Macmillan, 1957.

Sarason, G. Irwin, Johnson, H. James, and Judith, M. Siegel. Assessing the impact of Life changes: Development of the Life Experience Survey. Journal of Consulting and Clinical Psychology, 1978, vol.46, No.5, 932-946.

Selye, H. (1950). Stress. Acta, Montreal .

Selye, H. (1956). The stress of life. McGraw-Hill, New York.

Seligman, M.E.P. Helplessness : On depression, development and death. San Francisco, Freeman, 1975.

Sidney, Siegel, Non-parameteric statistics For the Behavioural Sciences. McGraw Hill, New York, 1956.

Symonds, Sir C.P. (1947). Use and abuse of the term flying stress. In 'Air Ministry, psychological Disorders in flying personnel of the Royal Air Force, investigated during the War, 1939-1945. H.M.S.O., London.

Tanka-Matsumi, J., & Marsella, A.J. Cross-cultural variations in the phenomenalogical experience of depression: Word association. Journal of cross-cultural psychology.1976, 7, 379-396.

Teja, J., Narang, R. Pattern of incidence of depression in India. Indian Journal of psychiatry, 1970, 12, 33-39.

Teja, J. Narang, R. & Aggarwal, A. Depression across cultures. British Journal of Psychiatry, 1971, 119, 33-39.

Tom Cox, 'Stress'. The Macmillan Press Ltd. London, 1978.

Wener, A., & Rehm, L.P. Depressive affect: A Test of behavioural hypothesis. Journal of Abnormal Psychology, 1975, vol. 84, 221-227.

Zung, W.A. Cross-cultural Survey of symptoms in depression. American Journal of Psychiatry, 1969, 126, 166-121.

Zung,WA . A cross cultural survey of depressive symptomatology in normal adults. Journal of Cross-cultural Psychology, 1972, 3, 177-183.

Zung, W.W.K., A Self-Rating Depression Scale, Arch. Gen. Psychiat. 12:63 (Jan.) 1965.

Zung, W., & Master, R. Cross-national Survey of symptoms of depressed and normal adults in India. Unpublished paper, veterans Administration Hospital, Durham, N.C. 1975.